

been added to provide Applicant with a more complete scope of protection. Claim 45 is the only claim in independent form. Favorable reconsideration is requested.

The Office Action rejected Claims 1, 2, 27-34, and 36-44 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,032,313 (Tokuhara) in view of an article in *Inorganic Materials*, 1992, vol. 28, no. 3 (Cheredov) and U.S. Patent No. 4,818,282 (Wanetzky et al.). Cancellation of those claims renders their rejections moot. Applicant submits that new independent Claim 45 is patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 45 is directed to a production apparatus for producing a crystal. The apparatus includes a crucible divided into a plurality of stages, with a lower portion of a first stage positioned to cover an upper edge of a wall portion of a second stage. The apparatus also includes a heater arranged to heat the crucible. A degassing hole is formed in a side wall portion of the crucible for discharging an impurity gas produced when a scavenger is added to refine a material.

One important feature of Claim 45 is that the production apparatus allows for gaseous impurities, which are generated when a scavenger is added to a material, to be easily discharged through a degassing hole in a side wall portion of the crucible. By virtue of this feature, the production apparatus is able to produce crystals of higher purity and higher spectral transmittance than crystals made by conventional means.

Tokuhara relates to an apparatus for producing optical fibers. Tokuhara teaches the use of a crucible 1 with an overflow passage 7 in a side wall thereof through which

molten (liquid) material flows. (See column 2, lines 36-41.)

Cheredov, as understood by Applicant, discloses a multiple-container crucible with concentric bottom holes.

Wanetzky et al., as understood by Applicant, relates to a method for recovering metal-carbide scrap. Apparently, Wanetzky et al. teaches the use of stacked crucibles, each formed with an annular channel. A vapor conduit 21 located at the bottom of a lowermost crucible apparently is used as an inlet to provide an inert gas to push metal vapors to a condensing unit. (See column 5, lines 25-45.)

Applicant submits that a combination of Tokuhara, Cheredov, and Wanetzky et al., assuming such combination would even be permissible, would fail to teach or suggest a crystal production apparatus that includes a crucible that has "formed therein a degassing hole in a side wall portion thereof for discharging an impurity gas produced when refining a material by adding a scavenger thereto," as recited in Claim 45. The cited references apparently do not address the problem of how to remove gaseous impurities and, thus, would not suggest to one of ordinary skill in the relevant art to include such a feature in a crucible for a crystal production apparatus. Accordingly, Applicant submits that Claim 45 is patentable over the cited art.

A review of the other art of record has failed to reveal anything that, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other claims in this application depend from Claim 45 and, therefore, are

submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

  
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